IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	: 10/000,009
Applicant	: SAITO
Filed	: December 4, 2001
TC/A.U.	: 1763
Examiner	: Rudy Zervigon
Docket No.	: 2922-161
Customer No.	: 06449
Confirmation No.	: 7966

TRANSMITTAL OF APPEAL BRIEF

Mail Stop - Appeal Brief-Patents
Director of the United States Patent
and Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Enclosed in connection with the above-referenced application is an Appeal Brief with Appendix in triplicate. A check is enclosed to cover the following fees: $330.00 to cover the fee for filing a brief in support of a notice of appeal.

Also, please charge any additional fees or credit any overpayment to Deposit Account No. 02-2135. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

By _____

Willem F. DeWeerd
Attorney for Applicants
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Washington, D.C. 20005
Telephone: (202)783-6040

Enclosure(s): Appeal Brief

Image AF/1763

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Complete if Known	
Application Number	10/000,009
Filing Date	December 4, 2001
First Named Inventor	SAITO
Examiner Name	Zervigon, Rudy
Group Art Unit	1763
Total Number of Pages in This Submission	Attorney Docket Number: 2922-161

ENCLOSURES *(check all that apply)*

- [X] Fee Transmittal Form
  - [X] Fee Attached
- [ ] Amendment and Request for Reconsideration
  - [ ] After Final
  - [ ] Declaration under Rule 312
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Assignment Papers
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s)

REMARKS:

- [ ] After Allowance Communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [X] Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) *(please identify below)*:

SUBMITTED BY				Complete (if applicable)	
NAME AND REG. NUMBER	Willem F.C. de Weerd, Reg. No. 51,613				
SIGNATURE		DATE	2-10-2004	DEPOSIT ACCOUNT USER ID **02-2135**	

FEE TRANSMITTAL for FY 2003 (Large Entity)

	Complete if Known
Application Number	10/000,009
Filing Date	December 4, 2001
First Named Inventor	SAITO
Examiner Name	Rudy Zervigon
Group Art Unit	1763
Total Amount of Payment ($)330.00	Attorney Docket Number 2922-161

METHOD OF PAYMENT (check one)

1. [X] The Commissioner is hereby authorized to charge additional fees and credit any overpayment to Deposit Account Number 02-2135 in the name of Rothwell, Figg, Ernst & Manbeck

   [x] Charge any Additional Fee Required Under 37 CFR 1.16 and 1.17

   [ ] Applicant claims small entity status

2. [x] Payment Enclosed
   - [x] Check
   - [ ] Credit Card

FEE CALCULATION

1. FILING FEE

Fee Code	Fee $	Fee Description	Fee Paid
1001	770	Utility filing fee	[ ]
1002	340	Design Filing Fee	[ ]
1003	530	Plant Filing Fee	[ ]
1004	770	Reissue Filing Fee	[ ]
1005	160	Provisional Filing Fee	[ ]

SUBTOTAL $

2. CLAIMS

		Extra Claims		Fee	Fee Paid
Total Claims	[ ] - 20** =	[ ]	x	$18 =	[ ]
Independent Claims	[ ] - 3** =	[ ]	x	86 =	[ ]
Multiple Dependent Claims			+	290 =	[ ]

***or number previously paid, if greater;*

SUBTOTAL $

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Fee Code	Fee Paid	Fee Description	Fee Paid
1051	130	Surcharge - late filing fee or oath	[ ]
1052	50	Surcharge - late provisional filing fee or cover sheet	[ ]
1053	130	Non-English specification	[ ]
1812	2,520	For filing a request for reexamination	[ ]
1804	920	Requesting publication of SIR prior to Examiner action	[ ]
1804	1,840*	Requesting publication of SIR after Examiner action	[ ]
1251	110	Extension for reply within first month	[ ]
1252	420	Extension for reply within second month	[ ]
1253	950	Extension for reply within third month	[ ]
1254	1,480	Extension for reply within fourth month	[ ]
1255	2,010	Extension for reply within fifth month	[ ]
1401	330	Notice of Appeal	[ ]
1402	330	Filing a brief in support of an appeal	[330]
1403	290	Request for Oral Hearing	[ ]
1451	1,510	Petition to institute a public use proceeding	[ ]
1452	110	Petition to revive -unavoidable	[ ]
1453	1,330	Petition to revive - unintentional	[ ]
1501	1,330	Utility issue fee (or reissue)	[ ]
1502	480	Design issue fee	[ ]
1503	640	Plant issue fee	[ ]
1460	130	Petitions to the Commissioner	[ ]
1807	50	Processing fee under 37 CFR 1.17(q)	[ ]
1806	180	Submission of Information Disclosure Statement	[ ]
8021	40	Recording each patent assignment per property (times number of properties)	[ ]
1809	770	Filing a submission after final rejection (37 CFR .129(a))	[ ]
1810	770	For each additional invention to be examined (37 CFR 1.129(b))	[ ]
1801	770	Request for Continued Examination (RCE)	[ ]
1802	900	Request for expedited examination of a design application	[ ]
1504	300	Publication fee for early, voluntary, or normal publication	[ ]
1505	300	Publication fee for republication	[ ]
1455	200	Filing application for patent term adjustment	[ ]
1456	400	Request for reinstatement of term reduced	[ ]
Other fee (specify)			[ ]

* Reduced by Basic Filing Fee Paid **SUBTOTAL** $330

SUBMITTED BY				Complete (if applicable)	
NAME AND REG. NUMBER	Willem F. DeWeerd, Reg. No. 51,613				
SIGNATURE		DATE	2-10-2004	DEPOSIT ACCOUNT USER ID	

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	Group Art Unit	**1763**
	Examiner Name	**Zervigon, Rudy**
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The owner of the above-referenced patent application and the real party in interest in this appeal is the assignee, Tanaka Kikinzoku Kogyo K.K., located in Japan.

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Applicants are unaware of any other appeals or interferences related to the subject matter of this appeal.

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Summary of The Invention

The invention is directed to a LPCVD apparatus with a gas trap which is provided with honeycomb-structure cylindrical fillers in a flowing passage through which the used raw material flows. It is a critical feature of the invention that, in the LPCVD apparatus gas trap, honeycomb structure cylindrical fillers are provided to recapture raw material which otherwise would be lost in the exhaust of the LPCVD apparatus.

In addition, the honeycomb structure in the gas trap is preferably a metal structure of particular dimensions to allow for optimal use of the gas trap to recover unreacted raw material without negatively effecting the exhaust pump performance in maintaining a low pressure in the LPCVD apparatus, as set forth in dependent claims 2, 3, and 9.

An important aspect of the gas trap of the current invention is to increase the cooling efficiency, compared to conventional gas traps in a LPCVD apparatus, when cooling used raw material in the trap. Such an increase in cooling efficiency can be established by increasing the amount of internal surfaces of the gas trap. However, the increase of internal surfaces, through for example additional fillers with high density, in the gas trap may result in a large pressure loss across the trap, which will make it difficult for an exhaust pump to carry out an exhaust operation. This in turn may bring about an undesired influence to the reaction in which a thin tin film is formed in the reactor. The honeycomb structure of the cylindrical fillers in the gas trap of the current invention increases the amount of internal surfaces, without bringing about such a large pressure drop across the gas trap (Specification page 5, line 22 to page 6, line 1). The gas trap in the LPCVD apparatus according to the current invention allows for efficient recovery of unreacted raw material because of the high cooling efficiency in the gas trap.

Furthermore, the current invention is directed to a cylindrical filler with a honeycomb structure in the gas trap of the LPCVD apparatus wherein the material of the cylindrical fillers is preferably a metal. A metal usually has a high thermal conductivity, and therefore using a metal to form the fillers of the gas trap makes it possible to efficiently cool the unreacted raw material. Moreover, the efficiency of the gas trap in cooling the unreacted raw material while preventing a

large pressure drop across the gas trap requires that the dimensions of the fillers in the gas trap. (Specification on page 7, line 23 to page 8, line 13).

The invention therefore comprises a LPCVD apparatus with a gas trap which is provided with honeycomb-structure cylindrical fillers in a flowing passage through which the used raw material flow, as set forth in claims 1-7, and 9. Specifically, independent claim 1 is directed to an LPCVD apparatus which comprises a trap provided upstream of an exhaust pump and cooling used raw material gas supplied from a reactor, wherein the trap is provided with honeycomb-structure cylindrical fillers in a flowing passage through which the used raw materials flow. Dependent claims 2-7 are directed to the apparatus of claim 1 where the honeycomb-structure cylindrical fillers have certain dimensions, where the gas trap in the apparatus has a pressure regulating valve, a back-flow valve and/or a by-pass pipe. Dependent claim 9 is directed to the apparatus of claim1 where the honeycomb-structure cylindrical fillers are metal.

Issue

The following issue is presented by this appeal:

1) Whether the subject matter of claims 1-7, and 9 is non-obvious over Fujikawa et al. in view of Calton et al. under by 35 U.S.C. 103(a).

Grouping of Claims

For purposes of this appeal, claims 1-7, directed to a gas trap in a low pressure CVD apparatus comprising a honeycomb structure, stand together.

For purposes of this appeal, claim 9, directed to a gas trap in a low pressure CVD apparatus comprising a metal honeycomb structure, stands separate.

Argument

1. Claims 1-7, and 9 are non-obvious over Fujikawa et al. in view of Calton et al.

The Examiner has asserted that Fujikawa et al. discloses a CVD apparatus comprising most of the elements of the LPCVD apparatus as claimed in the present application. (Office Action dated 9/10/03, at page 2 and 3). However, the Examiner recognizes that Fujikawa et al does not teach that the trap in the LPCVD apparatus is provided with an honeycomb-structure cylindrical filler in a flowing passage through which the used raw material flows. Further, according to the Examiner the Fujikawa et al reference does not teach the length of the honeycomb-structure cylindrical filler and the maximum diameter of the passage holes of the filler. In addition, the Examiner asserted that Fujikawa et al teach a bypass for the trap. The trap in the present invention has two back-flow valves whereas Fujikawa et al only teach one back-flow valve in the by-pass pipe. Furthermore, the Examiner stated that "Calton teaches a gas trap ("moisture transfer wheel" .....) with a honeycomb structure. Specifically, Calton teaches a trap .... provided with a honeycomb-structure cylindrical fillers in a flowing passage through which material flows." (Id. at page 4). According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Fujikawa et al.'s gas trap with Calton et al.'s gas trap with a honeycomb structure, including metallic cylindrical fillers. The Examiner asserted that the motivation to replace Fujikawa et al.'s gas trap with Calton et al.'s gas trap is to increase the heat transferred to the trap as taught by Calton et al. Therefore, the Examiner asserted Fujikawa et al. and Calton et al. teach a gas trap with a honeycomb structure, without increasing the size of the gas trap, which would have negative effects on the ability of the LPCVD system to maintain its operational pressure.

In addition, the Examiner asserted, in response to applicant's argument that there is no motivation to combine the teachings of Fujikawa et al. with Calton et al. as these references are from non-analogous art, that the prior art must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned. The Examiner stated that "in this case, Calton is both in the field of applicant's endeavor (gas traps) and is reasonably pertinent to a particular problem with which the applicant was concerned – collecting condensed gas." (Id. at page 7). Therefore, according to the Examiner, applicant's argument that there is no motivation to combine these references as these references are in non-analogous art was non-persuasive.

Also, in response to applicant's argument that it would not be obvious to one of ordinary skill in the art to change the dimensions of Calton's honeycomb structure to influence the surface area, the Examiner stated that "motivation to change the dimensions of the Calton's honeycomb structure to influence the surface area is to increase the heat transferred to the trap as taught by Calton and thereby ... increasing the condensation of the gas on the surface of Calton's trap." (Id. at page 7-8). The Examiner therefore stated that "it would have been obvious to one of ordinary skill in the art ... to replace Fujikawa et al.'s gas trap with Calton et al.'s gas trap with honeycomb structure cylindrical fillers."

Furthermore, in response to the final rejection, applicants submitted a proposed amendment wherein the claim limitation of claim 9, which specifies that the material of the honeycomb structure is metal, was inserted into claim 1. The Examiner in his Advisory Action refused to enter in the claim amendment as it would "require further searching". However, the Examiner should have already searched this limitation as it was previously presented in claim 9.

Moreover, the Examiner specifically addressed the issue of the honeycomb structure being metallic in his Office Actions. (See for example the Office Action dated September 10, 2003; at page 4, ¶ i).

In contrast to the Examiner's assertions, the Fujikawa et al reference does not teach or suggest increasing the cooling efficiency by including a honeycomb structure in the trap. Cooling efficiency as taught by Fujikawa et al is accomplished by changing the temperature of the coolant and the angle of the fins (four fins) in the trap. Although positioning of the fins within the trap may increase the efficiency of contact between the raw material gas and the fins, the reference in no way suggests inserting a honeycomb structure cylindrical filler in the gas trap to increase the available surface area for cooling in the gas trap. Fujikawa et al recognize the limitations of the gas trap, and there is no teaching or suggestion to correct the problem by including the honeycomb structure as claimed in the present invention.

The Calton et al reference discloses a moisture transfer wheel in an air conditioning system. This honeycomb structure in Calton et al is made of material which is non-metallic, has high strength, is temperature resistant, and has low thermal conductivity. Furthermore, the surface of the channels in the honeycomb structure made with this material can be coated with a desiccant, which interacts with the fluid media flowing through the channels to achieve water absorption from the air.

In contrast, the specification of the present invention indicates that the honeycomb structure should be made of a metal to increase cooling, as metal has a high capacity for transferring heat. Therefore, in addition to the fact that there is no motivation to combine a reference in the art of CVD apparatuses with a reference in the art of air conditioners, a

combination of Fujikawa et al. and Calton et al. does not teach a gas trap which transfers heat from the exhaust gas as in the presently claimed invention.

Moreover, in the moisture transfer wheel of Calton et al. the honeycomb structure is made from a temperature resistant, low thermal conductivity material, and is coated with desiccant to maximize absorption of water within the honeycomb structure (Calton et al., column 8, lines 30-53). This absorption is not desired in the present invention because the gas trap is designed to cool the exhaust gas, for which the honeycomb structure needs to have a high thermal conductivity. In addition, Calton et al. teaches that this material for constructing the honeycomb structure is preferably non-metallic (Calton et al, column 8, lines 30-49). The Examiner maintained in an Interview that there is motivation to combine the teachings by Calton et al. of a honeycomb structure in a moisture transfer wheel, which also transfers heat, with the gas trap in a LPCVD apparatus according to Fujikawa et al., to teach the current invention. However, it is incorrect to assert that the honeycomb structure as taught by Calton et al would increase the heat transferred to the trap. This heat transfer is essential for the trap of the present invention to be operational, and the trap does not rely upon the absorption of moisture in the honeycomb structure as taught by Calton et al. The moisture in the gas trap of the current invention is collected in the trap away from the honeycomb-structure cylindrical fillers. Therefore, the honeycomb structure in the gas trap, as in independent claim 1, is very different from the honeycomb structure in the prior art moisture transfer wheel. This is particularly true for claim 9, which is specifically directed to an apparatus according to claim 1, wherein the honeycomb-structure cylindrical fillers are metal, a material for the honeycomb-structure cylindrical filler not taught by Calton et al.

Thus, the claimed invention in claims 1-7, and 9 is unobvious over Fujikawa et al. in view of Calton et al., as the Fujikawa et al. reference does not teach or suggest a honeycomb structure cylindrical filler in the gas trap and there is no motivation to combine Calton et al. with Fujikawa et al. In addition, even if Fujikawa et al. and Calton et al. were combined the combination of these references does not teach or suggest the invention as in claim 9.

Furthermore, the honeycomb structure as taught by Calton et al would not work for its intended purpose in the current invention. The honeycomb structure of the current invention requires having certain particular dimensions as in claims 2 and 3. The Examiner indicated that Calton et al discusses dimensional ranges and a person of ordinary skill in the art would readily decide on the proper dimensions as Fujikawa et al also discloses the need to maintain a low pressure in the reaction chamber of the CVD apparatus. The constraints on the dimensions of the honeycomb structure are dictated by the need for the maintenance of the low pressure in the reaction chamber of the CVD apparatus, which is not taught or even suggested by Calton et al. Therefore, the claims directed to these dimensional limitations of the honeycomb-structure cylindrical fillers in the gas trap are also non-obvious over Fujikawa et al. and Calton et al. for this reason.

Applicants thus respectfully submit that the claims 1-7, and 9 of the present application are not obvious over Fujikawa et al. in view of Calton et al., and Applicants respectfully request withdrawal of this rejection.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that claims 1-7, and 9 are non-obvious over Fujikawa et al. in view of Calton et al. under 35 U.S.C. 103(a). All of the grounds for the rejection of claims 1-7, and 9 as advanced by the Examiner are submitted to be unsupportable by the record, and thus improper. The Honorable Board is therefore respectfully requested to reverse the final rejection, and to direct the passage of this application to issue.

RESPECTFULLY SUBMITTED,					
NAME AND REG. NUMBER	Willem F.C. de Weerd, Registration No. 51,613				
SIGNATURE				DATE	2-10-2004
Address	Rothwell, Figg, Ernst & Manbeck 1425 K Street, N.W., Suite 800				
City	Washington	*State*	D.C.	*Zip Code*	20005
Country	U.S.A.	*Telephone*	202-783-6040	*Fax*	202-783-6031

APPENDIX

1. An LPCVD apparatus comprising, a container for accommodating an organometallic compound, said compound serving as a raw material; a heating means for heating the container and vaporizing the organometallic compound to obtain a raw material gas; a reactor for accommodating a substrate on which a thin film is precipitated; an exhaust pump for maintaining a low pressure atmosphere within the reactor; and a trap provided on the upstream of the exhaust pump and cooling used raw material gas supplied from the reactor, wherein said trap is provided with honeycomb-structure cylindrical fillers in a flowing passage through which the used raw material flows.

2. The LPCVD apparatus according to claim 1, wherein the length of the honeycomb-structure cylindrical fillers is in a range of 0.01 to 1.0 m in a direction along which the used raw material flows.

3. The LPCVD apparatus according to claim 1, wherein the honeycomb-structure cylindrical fillers have holes with a maximum diameter of 0.5 to 10.

4. The LPCVD apparatus according to claim 1, wherein said apparatus is provided with a trap-pressure-regulating valve for adjusting the internal pressure in the trap, and the exhaust pump.

5. The LPCVD apparatus according to claim 1, wherein said apparatus is provided with a back-flow valve for preventing a back flow of the used raw material in the trap, said back-flow valve being located between the reactor and the trap.

6. The LPCVD apparatus according to claim 1, wherein said apparatus is connected with a first and a second pipes and provided with a by-pass pipe which bypasses the trap, said first pipe connecting the reactor and the trap and said second pipe connecting the trap and the pump.

7. The LPCVD apparatus according to claim 1, wherein said by-pass pipe is provided at the both ends thereof with a back-flow valve.

9. The LPCVD apparatus according to claim 1 wherein the honeycomb-structure cylindrical fillers are metal honeycomb-structure cylindrical fillers.

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In addition, the honeycomb structure in the gas trap is preferably a metal structure of particular dimensions to allow for optimal use of the gas trap to recover unreacted raw material without negatively effecting the exhaust pump performance in maintaining a low pressure in the LPCVD apparatus, as set forth in dependent claims 2, 3, and 9.

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Furthermore, the current invention is directed to a cylindrical filler with a honeycomb structure in the gas trap of the LPCVD apparatus wherein the material of the cylindrical fillers is preferably a metal. A metal usually has a high thermal conductivity, and therefore using a metal to form the fillers of the gas trap makes it possible to efficiently cool the unreacted raw material. Moreover, the efficiency of the gas trap in cooling the unreacted raw material while preventing a

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Also, in response to applicant's argument that it would not be obvious to one of ordinary skill in the art to change the dimensions of Calton's honeycomb structure to influence the surface area, the Examiner stated that "motivation to change the dimensions of the Calton's honeycomb structure to influence the surface area is to increase the heat transferred to the trap as taught by Calton and thereby ... increasing the condensation of the gas on the surface of Calton's trap." (Id. at page 7-8). The Examiner therefore stated that "it would have been obvious to one of ordinary skill in the art ... to replace Fujikawa et al.'s gas trap with Calton et al.'s gas trap with honeycomb structure cylindrical fillers."

Furthermore, in response to the final rejection, applicants submitted a proposed amendment wherein the claim limitation of claim 9, which specifies that the material of the honeycomb structure is metal, was inserted into claim 1. The Examiner in his Advisory Action refused to enter in the claim amendment as it would "require further searching". However, the Examiner should have already searched this limitation as it was previously presented in claim 9.

Moreover, the Examiner specifically addressed the issue of the honeycomb structure being metallic in his Office Actions. (See for example the Office Action dated September 10, 2003; at page 4, ¶ i).

In contrast to the Examiner's assertions, the Fujikawa et al reference does not teach or suggest increasing the cooling efficiency by including a honeycomb structure in the trap. Cooling efficiency as taught by Fujikawa et al is accomplished by changing the temperature of the coolant and the angle of the fins (four fins) in the trap. Although positioning of the fins within the trap may increase the efficiency of contact between the raw material gas and the fins, the reference in no way suggests inserting a honeycomb structure cylindrical filler in the gas trap to increase the available surface area for cooling in the gas trap. Fujikawa et al recognize the limitations of the gas trap, and there is no teaching or suggestion to correct the problem by including the honeycomb structure as claimed in the present invention.

The Calton et al reference discloses a moisture transfer wheel in an air conditioning system. This honeycomb structure in Calton et al is made of material which is non-metallic, has high strength, is temperature resistant, and has low thermal conductivity. Furthermore, the surface of the channels in the honeycomb structure made with this material can be coated with a desiccant, which interacts with the fluid media flowing through the channels to achieve water absorption from the air.

In contrast, the specification of the present invention indicates that the honeycomb structure should be made of a metal to increase cooling, as metal has a high capacity for transferring heat. Therefore, in addition to the fact that there is no motivation to combine a reference in the art of CVD apparatuses with a reference in the art of air conditioners, a

combination of Fujikawa et al. and Calton et al. does not teach a gas trap which transfers heat from the exhaust gas as in the presently claimed invention.

Moreover, in the moisture transfer wheel of Calton et al. the honeycomb structure is made from a temperature resistant, low thermal conductivity material, and is coated with desiccant to maximize absorption of water within the honeycomb structure (Calton et al., column 8, lines 30-53). This absorption is not desired in the present invention because the gas trap is designed to cool the exhaust gas, for which the honeycomb structure needs to have a high thermal conductivity. In addition, Calton et al. teaches that this material for constructing the honeycomb structure is preferably non-metallic (Calton et al, column 8, lines 30-49). The Examiner maintained in an Interview that there is motivation to combine the teachings by Calton et al. of a honeycomb structure in a moisture transfer wheel, which also transfers heat, with the gas trap in a LPCVD apparatus according to Fujikawa et al., to teach the current invention. However, it is incorrect to assert that the honeycomb structure as taught by Calton et al would increase the heat transferred to the trap. This heat transfer is essential for the trap of the present invention to be operational, and the trap does not rely upon the absorption of moisture in the honeycomb structure as taught by Calton et al. The moisture in the gas trap of the current invention is collected in the trap away from the honeycomb-structure cylindrical fillers. Therefore, the honeycomb structure in the gas trap, as in independent claim 1, is very different from the honeycomb structure in the prior art moisture transfer wheel. This is particularly true for claim 9, which is specifically directed to an apparatus according to claim 1, wherein the honeycomb-structure cylindrical fillers are metal, a material for the honeycomb-structure cylindrical filler not taught by Calton et al.

Thus, the claimed invention in claims 1-7, and 9 is unobvious over Fujikawa et al. in view of Calton et al., as the Fujikawa et al. reference does not teach or suggest a honeycomb structure cylindrical filler in the gas trap and there is no motivation to combine Calton et al. with Fujikawa et al. In addition, even if Fujikawa et al. and Calton et al. were combined the combination of these references does not teach or suggest the invention as in claim 9.

Furthermore, the honeycomb structure as taught by Calton et al would not work for its intended purpose in the current invention. The honeycomb structure of the current invention requires having certain particular dimensions as in claims 2 and 3. The Examiner indicated that Calton et al discusses dimensional ranges and a person of ordinary skill in the art would readily decide on the proper dimensions as Fujikawa et al also discloses the need to maintain a low pressure in the reaction chamber of the CVD apparatus. The constraints on the dimensions of the honeycomb structure are dictated by the need for the maintenance of the low pressure in the reaction chamber of the CVD apparatus, which is not taught or even suggested by Calton et al. Therefore, the claims directed to these dimensional limitations of the honeycomb-structure cylindrical fillers in the gas trap are also non-obvious over Fujikawa et al. and Calton et al. for this reason.

Applicants thus respectfully submit that the claims 1-7, and 9 of the present application are not obvious over Fujikawa et al. in view of Calton et al., and Applicants respectfully request withdrawal of this rejection.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that claims 1-7, and 9 are non-obvious over Fujikawa et al. in view of Calton et al. under 35 U.S.C. 103(a). All of the grounds for the rejection of claims 1-7, and 9 as advanced by the Examiner are submitted to be unsupportable by the record, and thus improper. The Honorable Board is therefore respectfully requested to reverse the final rejection, and to direct the passage of this application to issue.

RESPECTFULLY SUBMITTED,					
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APPENDIX

1. An LPCVD apparatus comprising, a container for accommodating an organometallic compound, said compound serving as a raw material; a heating means for heating the container and vaporizing the organometallic compound to obtain a raw material gas; a reactor for accommodating a substrate on which a thin film is precipitated; an exhaust pump for maintaining a low pressure atmosphere within the reactor; and a trap provided on the upstream of the exhaust pump and cooling used raw material gas supplied from the reactor, wherein said trap is provided with honeycomb-structure cylindrical fillers in a flowing passage through which the used raw material flows.

2. The LPCVD apparatus according to claim 1, wherein the length of the honeycomb-structure cylindrical fillers is in a range of 0.01 to 1.0 m in a direction along which the used raw material flows.

3. The LPCVD apparatus according to claim 1, wherein the honeycomb-structure cylindrical fillers have holes with a maximum diameter of 0.5 to 10.

4. The LPCVD apparatus according to claim 1, wherein said apparatus is provided with a trap-pressure-regulating valve for adjusting the internal pressure in the trap, and the exhaust pump.

5. The LPCVD apparatus according to claim 1, wherein said apparatus is provided with a back-flow valve for preventing a back flow of the used raw material in the trap, said back-flow valve being located between the reactor and the trap.

6. The LPCVD apparatus according to claim 1, wherein said apparatus is connected with a first and a second pipes and provided with a by-pass pipe which bypasses the trap, said first pipe connecting the reactor and the trap and said second pipe connecting the trap and the pump.

7. The LPCVD apparatus according to claim 1, wherein said by-pass pipe is provided at the both ends thereof with a back-flow valve.

9. The LPCVD apparatus according to claim 1 wherein the honeycomb-structure cylindrical fillers are metal honeycomb-structure cylindrical fillers.